

Syllabus (2022-2023)

Class XI

# English

QUESTION PAPER DESIGN

|  |  |
| --- | --- |
| Typology | Marks |
| Reading skills | 26 |
| Writing skills & Grammar | 23 |
| Literature | 31 |
| Total | 80 |
| Assessment of Speaking &  Listening skills | 10 (5+5) |
| Project Work | 10 |
| Total | 100 |

# July

Hornbill:ThePortrait of A Lady

A photograph (Poem)

We’re not Afraid to Die… if we can be together

Snapshots:The Summer of aBeautiful WhiteHorse

Grammar:Tenses, Vocabulary Building Exercises,Transformation of Sentences

Writing: Poster designing

Reading:Unseen Comprehension

# Augustand September

Hornbill:Discovering Tut: The Saga Continues

The Voice of the Rain (Poem)

Snapshots : TheAddress

Grammar: Sentence Reordering ,Clauses, Vocabulary Building Exercises

Writing:Speech

Reading: Note Making

ASSESSMENT OF LISTENING AND SPEAKING SKILLS

# October and November

Hornbill:The Adventure

The Laburnum Top (Poem)

Father to Son (Poem)

Snapshots: Mother's Day

Birth

Writing: Classified Advertisement

Grammar:Tenses, Vocabulary Building Exercises

Reading: Unseen Comprehension

# December

Hornbill: Childhood(Poem)

Snapshots :The Tale of Melon City

Grammar: Reordering of Sentences Transformation of Sentences

Writing: Debate Writing

Reading: Note-making

# January and February

Hornbill: The Silk Road

Grammar: Integrated Grammar, Reordering of Sentences

Reading:Note-making

PROJECT WORK ASSESSMENT

# PERIODIC TEST– I

Hornbill: The Portrait of A Lady

A photograph (Poem)

We’re not Afraid to Die… if we can be together

Snapshots: The Summer of a Beautiful White Horse

Grammar: Tenses, Vocabulary Building Exercises, Transformation of Sentences

Writing: Poster designing

Reading: Unseen Comprehension

# MID TERM Examination

Hornbill: The Portrait of A Lady

We’re not Afraid to Die… if we can be together

Discovering Tut: The Saga Continues

A photograph (Poem)

The Voice of the Rain (Poem)

Snapshots:The Summer of a Beautiful White Horse,The Address

Grammar: Tenses, Sentence Reordering , Clauses, Transformation of Sentences

Writing: Poster Designing, Speech

Reading: Unseen Comprehension

Note Making

# PERIODIC SYLLABUS II

Hornbill: The Adventure

The Laburnum Top (Poem)

Father to Son (Poem)

Snapshots: Mother's Day

Birth

Writing: Classified Advertisement

Grammar: Tenses, Vocabulary Building Exercises

Reading: Unseen Comprehension

# ANNUAL EXAMINATION

Hornbill: The Portrait of A Lady

A photograph (Poem)

We’re not Afraid to Die… if we can be together

Discovering Tut: The Saga Continues

The Voice of the Rain (Poem)

The Adventure

The Laburnum Top (Poem)

Father to Son (Poem)

Childhood(Poem)

The Silk Road

Snapshots: The Summer of a Beautiful White Horse

The Address

Mother's Day

Birth

The Tale of Melon City

Grammar:Tenses, Clauses, Reordering, Transformation of Sentences

Writing:Poster

Classified Advertisement

Speech

Debate

# BUSINESS STUDIES (054)

|  |  |  |
| --- | --- | --- |
|  | Units | Marks |
| Part A | Foundations of Business |  |
| 1 | Nature and Purpose of Business | 16 |
| 2 | Forms of Business Organizations |
| 3 | Public, Private and Global Enterprises | 14 |
| 4 | Business Services |
| 5 | Emerging Modes of Business | 10 |
| 6 | Social Responsibility of Business and Business Ethics |
| Part B | Finance and Trade |  |
| 7 | Sources of Business Finance | 20 |
| 8 | Small Business |
| 9 | Internal Trade | 20 |
| 10 | International Trade |
|  | Theory (Part A + Part B) | 80 |
| Part C | Project Work (ONE) | 20 |
|  | Total | 100 |

**JULY**

PART A: FOUNDATIONS OF BUSINESS

Unit 1: Evolution and Fundamentals of Business

* History of Trade and Commerce in India: Indigenous Banking System, Rise of Intermediaries, Transport, Trading Communities: Merchant Corporations, Major Trade Centres, Major Imports and Exports, Position of Indian Sub-Continent in the World Economy.  Business – meaning and characteristics
* Business, profession, and employment -Concept
* Objectives of business
* Classification of business activities - Industry and Commerce
* Industry-types: primary, secondary, tertiary Meaning and subgroups
* Commerce-trade: (types-internal, external; wholesale and retail) and auxiliaries to trade; (banking, insurance, transportation, warehousing,

communication, and advertising) – meaning

* Business risk-Concept

Unit 2: Forms of Business organizations

* Sole Proprietorship-Concept, merits, and limitations.
* Partnership-Concept, types, merits and limitation of partnership, registration of a partnership firm, partnership deed. Types of partners
* Hindu Undivided Family Business: Concept
* Cooperative Societies-Concept, merits, and limitations.
* Company - Concept, merits, and limitations; Types: Private, Public and One Person Company – Concept
* Formation of company - stages, important documents to be used in formation of a company
* Choice of form of business organization

## AUGUST-SEPTEMBER

Unit 3: Public, Private and Global Enterprises

* Public sector and private sector enterprises – Concept
* Forms of public sector enterprises: Departmental Undertakings, Statutory Corporations and Government Company
* Global Enterprises – Feature. Public private partnership – concept

## Unit 4: Business Services

* Business services – meaning and types. Banking: Types of bank accounts - savings, current, recurring, fixed deposit, and multiple option deposit account
* Banking services with particular reference to Bank Draft, Bank Overdraft, Cash credit. E-Banking meaning, Types of digital payments
* Insurance – Principles. Types – life, health, fire and marine insurance – concept
* Postal Service - Mail, Registered Post, Parcel, Speed Post, Courier – meaning

Unit 5: Emerging Modes of Business

* E - business: concept, scope and benefits

# REVISION (MID TERM EXAMS)

## OCTOBER & NOVEMBER

Unit 6: Social Responsibility of Business and Business Ethics

* Concept of social responsibility  Case of social responsibility.
* Responsibility towards owners, investors, consumers, employees, government, and community.
* Role of business in environment protection
* Business Ethics - Concept and Elements

**Part B: Finance and Trade**

Unit 7: Sources of Business Finance

* Concept of business finance
* Owners’ funds- equity shares, preferences share, retained earnings
* Borrowed funds: debentures and bonds, loan from financial institution and commercial banks, public deposits, trade credit, Inter Corporate Deposits (ICD).

# Project Work as per CBSE Guidelines

## DECEMEBER

Unit 8: Small Business and Enterprises

* Entrepreneurship Development (ED): Concept, Characteristics and Need. Process of Entrepreneurship Development: Start-up India Scheme, ways to fund start-up. Intellectual Property Rights and Entrepreneurship
* Small scale enterprise as defined by MSMED Act 2006 (Micro, Small and Medium Enterprise Development Act)
* Role of small business in India with special reference to rural areas
* Government schemes and agencies for small scale industries: National Small Industries Corporation (NSIC) and District Industrial Centre (DIC) with special reference to rural, backward areas

Unit 9: Internal Trade

* Internal trade - meaning and types of services rendered by a wholesaler and a retailer
* Types of retail-trade-Itinerant and small-scale fixed shops retailers
* Large scale retailers-Departmental stores, chain stores – concept
* GST (Goods and Services Tax): Concept and key-features

## JANUARY & FEBRUARY

Unit 10: International Trade

* International trade: concept and benefits
* Export trade – Meaning and procedure
* Import Trade - Meaning and procedure
* Documents involved in International Trade; indent, letter of credit, shipping order, shipping bills, mate’s receipt (DA/DP)
* World Trade Organization (WTO) meaning and objectives

# REVISION (COMPLETE SYLLABUS)

**ASSESSMENTS**

## PERIODIC TEST 1 (AUGUST)

Unit 1: Evolution and Fundamentals of Business

Unit 2: Forms of Business organizations

## MID TERM EXAMINATION (SEPTEMBER)

Unit 1: Evolution and Fundamentals of Business

Unit 2: Forms of Business organizations

Unit 3: Public, Private and Global enterprises

Unit 4: Business Services

Unit 5: Emerging Modes of Business

**PERIODIC TEST 2 (DECEMBER)**

Unit 6: Social responsibility of business and business ethics

Unit 7: Sources of Business Finance

**ANNUAL EXAMINATION (MARCH) - Full Syllabus**

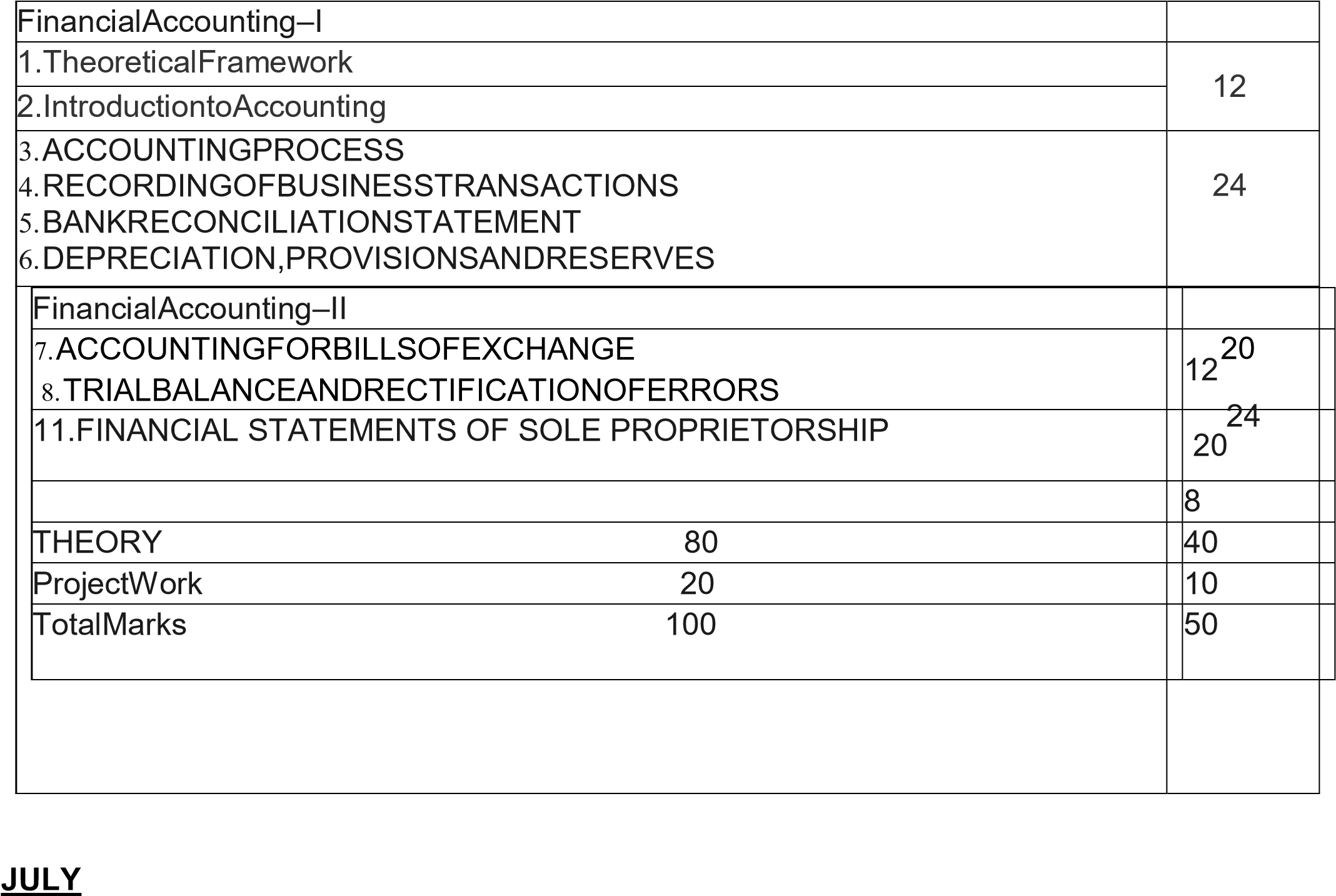
# PROJECT ASSESSEMENT

PROJECT WORK TOTAL 20 MARKS (ONLY ONE PROJECT)

|  |  |
| --- | --- |
| ASSESSMENT RUBRICS | MARKS |
| Initiative, cooperativeness, and participation | 2 |
| Creativity in presentation | 2 |
| Content, observation and research work | 4 |
| Analysis of situations | 4 |
| Viva based on the project | 8 |
| TOTAL | 20 |

## ACCOUNTANCY(055)

|  |  |
| --- | --- |
|  |  |
| Topic | Marks |



## PartA:FinancialAccounting-I

**Unit-1:TheoreticalFramework**

Introduction to Accounting • Accounting- concept, objectives, advantages and limitations, types of accounting information; users of accounting information and their needs. Qualitative Characteristics of Accounting Information. Role of Accounting in Business. • Basic Accounting Terms- Business Transaction,

Capital, Drawings. Liabilities (Non Current and Current). Assets (Non Current,

Current); Fixed assets (Tangible and Intangible), Expenditure (Capital and

Revenue), Expense, Income, Profit, Gain, Loss, Purchase, Sales,

Goods, Stock, Debtor, Creditor, Voucher, Discount(Trade discount and Cash Discount)

**AUGUST-SEPTEMBER**

Unit 2:Theory Base of Accounting

Fundamental accounting assumptions: GAAP: Concept • Business Entity,

Money Measurement, Going Concern, Accounting Period, Cost Concept, Dual Aspect, Revenue Recognition, Matching, Full Disclosure, Consistency,

Conservatism, Materiality and Objectivity • System of Accounting. Basis of Accounting: cash basis and accrual basis • Accounting Standards: Applicability • Goods and Services Tax (GST):Characteristics and Objective.

Unit3: AccountingProcess

Voucher and Transactions: Source documents and

Vouchers, Preparation of Vouchers. Accounting Equation Approach: Meaning and Analysis Rules of Debit and Credit.

Unit4: Journal

Original book of entry: recording of simple and compound entries

Unit5:Special Purpose books

: • Cash Book: Simple, cash book with bank column and petty cashbook • Purchases book • Sales book •Purchases return book• Sales return book

Unit6:Ledgerposting

Format, Posting from journal and subsidiary books, Balancing of accounts

# Project on Books of Original Entry, Journal,

Ledger and Trial Balance

## OCTOBER-NOVEMBER

Unit 7:Bank Reconciliation Statement

• Need and preparation.

Unit 8: Depreciation Reserve and Provision

* Concept and Merits of charging depreciation.
* Straight line method of depreciation

Unit8:Depreciation, Provisions and Reserve

* Depreciation: Concept, Features, Causes, factors • Other similar terms:

Depletion and Amortisation •Methods of Depreciation: i. Straight Line Method

(SLM) ii. Written Down Value Method (WDV) (only accounting with one method excluding change of method)

Unit 9: Accounting for Bills of Exchange

* Bill of exchange and Promissory Note: Definition, Specimen, Features, Parties.
* Difference between Bill of Exchange and Promissory Note• Terms in Bill of Exchange:
* i. Term of (concept)
* ii. Days of Grace
* iii. Date of maturity
* iv. Discounting of bill

v. Endorsement of bill

vi. Bill after due date

vii Negotiation

viii) Bill sent for collection

ix. Dishonour of bill

•Accounting Treatment

* # Project work (part II) preparation of financial statements

DECEMBER

Unit 10: Trial balance

 Errors and Rectification

* Trial balance: objectives and preparation (Scope: Trial balance with balance method only) • Errors: types-errors of omission, commission, principles, and compensating; their effect on Trial Balance. • Detection and rectification of errors; preparation of suspense account.

**JANUARY-FEBRUARY**

## PartB:Financial Accounting- II

Unit11:Financial Statement Analysis

Financial Statements Meaning, objectives and importance; Revenue and Capital Receipts; Revenue and Capital Expenditure; Deferred Revenue expenditure.

Trading and Profit and Loss Account: Gross Profit, Operating profit and Net profit. Preparation. Balance Sheet: need, grouping and marshalling of assets and liabilities. Preparation. Adjustments in preparation of financial statements with respect to closing stock, outstanding expenses, prepaid expenses, accrued income, income received in advance, depreciation, bad debts, provision for doubtful debts, provision for discount on debtors, Abnormal loss, goods taken for personal use/staff welfare, interest on capital and managers commission. Preparation of Trading and Profit and Loss account and Balance Sheet of a sole proprietorship with adjustments

REVISION OF COMPLETE SYLLABUS

## ASSESSMENTS PeriodicTest1(AUGUST)

* Introduction of Accounting
* Basic terms of Accounting
* Theory Base of Accounting
* Accounting Equation
* Rules of debit and credit

## Mid Term Examination(September)

* Introduction of Accounting
* Theory Base of Accounting
* Recording of Business Transaction
* Preparation of Ledger
* Cashbook
* Depreciation ,Reserve and Provisions

## Periodic TestII (DECEMBER)

* Accounting for Bills of Exchange
* Rectification of Errors
* Trial balance

### Annual Examination(MARCH) Complete syllabus as per CBSE guidelines

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|  |  |
| --- | --- |
| **PROJECT** |  |
| PARTICULARS | MARKS |
| WRITTEN  FILE  VIVA  TOTAL | 12  4  4  20 |

**Chemistry (043)**

**Theory: 70 Marks**

# Practical: 30 Marks

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO** | **UNIT** | **PERIODS** | **MARKS** |
| 1 | Some Basic Concepts of Chemistry | 18 | 7 |
| 2 | Structure of Atom | 20 | 9 |
| 3 | Classification of Elements and  Periodicity in Properties | 12 | 6 |
| 4 | Chemical Bonding and Molecular  Structure | 20 | 7 |
| 5 | Chemical Thermodynamics | 23 | 9 |
| 6 | Equilibrium | 20 | 7 |
| 7 | Redox Reactions | 9 | 4 |
| 8 | Organic Chemistry: Some basic  Principles and Techniques | 20 | 11 |
| 9 | Hydrocarbons | 18 | 10 |
|  | **TOTAL** | **160** | **70** |

Month Wise Syllabus

# JULY

## Unit-1 Some Basic Concepts Of Chemistry

General Introduction: Importance and scope of Chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.

## Unit -2 Structure of Atom

Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals.

# August-September

## Unit -3 Classification of Elements and Periodicity in Properties

Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100. **Unit -4 Chemical Bonding & Molecular structure**

Valence electrons, ionic bond, covalent bond, bond parameters, Lewis’s structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), Hydrogen bond.

# October-November

## Unit -6. Chemical Thermodynamics

Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics -internal energy and enthalpy, heat capacity and specific heat, measurement of ΔU and ΔH, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non- spontaneous processes, criteria for equilibrium. Third law of thermodynamics (brief introduction).

## Unit -7. Equilibrium

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).

# December

## Unit -12 Organic Chemistry – Some Basic Principles and Techniques

General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

# January-February

## Unit -13 Hydrocarbon

**Classification of Hydrocarbons**

Aliphatic Hydrocarbons:

Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.

Alkenes - Nomenclature, the structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.

Alkynes - Nomenclature, the structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.

Aromatic Hydrocarbons:

Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of the functional group in monosubstituted benzene. Carcinogenicity and toxicity.

## Unit -8 Redox Reactions

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.

**Assessments**

**PERIODIC TEST 1 (AUGUST)**

Unit-1 Some Basic Concepts Of Chemistry

Unit -2 Structure of Atom

**MID TERM EXAMINATION (SEPTEMBER)**

Unit-1 Some Basic Concepts Of Chemistry

Unit -2 Structure of Atom

Unit -3 Classification of Elements and Periodicity in Properties

Unit -4 Chemical Bonding & Molecular structure

**PERIODIC TEST 2 (DECEMBER)**

Unit -7. Equilibrium

Unit -12 Organic Chemistry – Some Basic Principles and Techniques

**ANNUAL EXAMINATION (MARCH)**

Complete Syllabus

# PRACTICALS

|  |  |
| --- | --- |
| **Evaluation Scheme for Examination** | **Marks** |
| Volumetric Analysis | 08 |
| Salt Analysis | 08 |
| Content Based Experiment | 06 |
| Project Work | 04 |
| Class record and viva | 04 |
| **Total** | **30** |

PRACTICAL SYLLABUS Total Periods: 60

1. **Basic Laboratory Techniques**
   1. Cutting glass tube and glass rod
   2. Bending a glass tube
   3. Drawing out a glass jet
   4. Boring a cork
2. **Characterization and Purification of Chemical Substances**
   1. Determination of melting point of an organic compound.
   2. Determination of boiling point of an organic compound.
   3. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid.
3. **Experiments based on pH**
   1. Any one of the following experiments:
      1. Determination of pH of some solutions obtained from fruit

juices, solution of known and varied concentrations of acids, bases and salts using pH paper or universal indicator.

* + 1. Comparing the pH of solutions of strong and weak acids of same concentration. Study the pH change in the titration of a strong base using universal indicator.
  1. Study the pH change by common-ion in case of weak acids and weak bases.

1. **Chemical Equilibrium**

**One of the following experiments:**

* 1. Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either of the ions.
  2. Study the shift in equilibrium between [Co(H2O)6]2+ and chloride ions by changing the concentration of either of the ions.

1. **Quantitative Estimation**

* 1. Using a mechanical balance/electronic balance.
  2. Preparation of standard solution of Oxalic acid.
  3. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.
  4. Preparation of standard solution of Sodium carbonate.
  5. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.

1. **Qualitative Analysis**
   1. Determination of one anion and one cation in a given salt

**Cation:**

Pb2+, Cu2+ As3+, Aℓ3+, Fe3+, Mn2+, Zn2+, Ni2+, Ca2+, Sr2+, Ba2+, Mg2+, NH +

**Anions:**

(CO3)2-, S2-, (SO3)2-, (NO2)-, (SO4)2-, Cℓ-, Br-, I-, (PO4)3-, (C2O4)2-, CH3COO-, NO

-

(Note: Insoluble salts excluded)

* 1. Detection of -Nitrogen, Sulphur, Chlorine in organic compounds.

**Project:**

**Study of acidity of fruit and vegetable juices.**

Note: Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

## COMPUTER SCIENCE (083)

|  |  |  |
| --- | --- | --- |
| **Distribution of Marks:** | |  |
| **THEORY** | |  |
| Units |  | Marks |
| I | Computational System & Organization | 10 |
| II | Computational Thinking & Programming-1 | 45 |
| III | Society Law & Ethics | 15 |
| Total Theory | | 70 |
| **PRACTICAL** | | 30 |
| Total | | 100 |

Practical

|  |  |  |
| --- | --- | --- |
| **S.No** |  | **Marks**  **Total**  **(30)** |
| 1 | **Lab Test:**  1. Python program (60% logic + 20% documentation + 20% code quality | **12** |
| 2 | **Report file:**   Minimum 20 Python programs. | **7** |
| 3 | **Project**  Project (using concepts learnt in Classes 11 and 12) | **8** |
| 4 | **Viva voce** | **3** |

## JULY

### CH-2 DATA REPRESENTATION & BOOLEAN LOGIC

●Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan’s laws and logic circuits

* Number system: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems.
* Encoding schemes: ASCII, ISCII and UNICODE (UTF8, UTF32

### CH-4 PYTHON PROGRAMMING FUNDAMENTALS

Familiarization with the basics of Python programming: Introduction to Python, features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments

* Knowledge of data types: number (integer, floating point, complex), boolean, sequence (string, list, tuple), none, mapping (dictionary), mutable and immutable data types
* Operators: arithmetic operators, relational operators, logical operators, assignment operator, augmented assignment operators, identity operators(is, is not), membership operators(in, not in)
* Expressions, statement, type conversion & input/output: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output

## AUGUST -SEPTEMBER

### CH :5 CONDITIONAL & LOOPING CONSTRUCTS

Flow of control: introduction, use of indentation, sequential flow, conditional and iterative flow control ● Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number

* Iterative statements: for loop, range function, while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc

CH-7 LISTS IN PYTHON :

introduction, indexing, list operations (concatenation, repetition, membership & slicing), traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs:

finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list

CH-10 SOCIETY , LAW & ETHICS

* Digital Footprints ● Digital society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
* Data protection: Intellectual Property Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)

## OCTOBER – NOVEMBER

CH-6 STRINGS IN PYTHON : Introduction, indexing, string operations

(concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()

CH-8 TUPLES AND DICTIONARY :

**Tuples** : introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions: len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple, suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tupl

Dictionary: introduction, accessing itemsin a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), del, clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(), copy(); suggested programs : count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them

## DECEMBER

### CH-1 COMPUTER SYSTEM ORGANISATION

**Basic Computer Organization**: Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB, GB, TB, PB) ● Types of software: system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software ● Operating system (OS): functions of operating system, OS user interface

#### Ch-3 Computational Thinking and Getting Started with Python

Introduction to problem solving: Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). representation of algorithms using flow chart and pseudo code, decomposition

### CH-9 INTRODUCTION TO PYTHON MODULES

Introduction to Python modules: Importing module using 'import <module>' and using from statement, Importing math module (pi, e, sqrt, ceil, floor, pow, fabs, sin, cos, tan); random module (random, randint, randrange), statistics module (mean, median, mode)

## JANUARY-FEBRUARY

CH-11 Cyber safety

* Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime
* Cyber safety: safely browsing the web, identity protection, confidentiality, cyber trolls and bullying.
* Safely accessing web sites: malware, viruses, trojans, adware
* E-waste management: proper disposal of used electronic gadgets ● Indian

Information Technology Act (IT Act)

* Technology & Society: Gender and disability issues while teaching and using computers

## REVISION & COMPLETION OF PRACTICAL & PROJECT WORK

**PERIODIC TEST- I**

**CH-2 DATA REPRESENTATION & BOOLEAN LOGIC**

**CH-4 PYTHON PROGRAMMING FUNDAMENTALS**

**TERM- I ( MID SEPTEMBER)**

|  |  |
| --- | --- |
| **CH-2** | **DATA REPRESENTATION & BOOLEAN LOGIC** |
| **CH-4** | **PYTHON PROGRAMMING FUNDAMENTALS** |
| **CH :5** | **CONDITIONAL & LOOPING CONSTRUCTS** |
| **CH-7** | **LISTS IN PYTHON :** |

**CH-10 SOCIETY , LAW & ETHICS**

**PERIODIC TEST- II (DECEMBER)**

**CH-6 STRINGS IN PYTHON**

**CH-8 TUPLES AND DICTIONARY :**

**ANNUAL EXAMINATION (MARCH )**

COMPLETE SYLLABUS AS PER CBSE GUIDELINES

## Economics (030)

|  |  |  |
| --- | --- | --- |
| **Units** |  | **Marks** |
| **Part A** | **Introductory Microeconomics** |  |
|  | Introduction | 4 |
|  | Consumer Equilibrium and Demand | 15 |
|  | Producer Behaviour and Supply | 15 |
|  | Forms of market and Price Determination | 6 |
|  | **Total** | **40** |
| **Part B** | **Statistics for Economics** |  |
|  | Introduction | 15 |
|  | Collection, Introduction and Presentation of Data |
|  | Statistical Tools and Interpretation | 25 |
|  | **Total** | **40** |
| **Part C** | Project Work | 20 |
| **Grand Total** | **A+B+C**  Theory Paper = 80 Marks  Project = 20 Marks | **100** |

**July**

**Micro Economics**

 **Unit: 5 Demand**

 Demand, market demand, determinants of demand, demand schedule, demand curve and its slope, movement along and shifts in the demand curve; price elasticity of demand - factors affecting price elasticity of demand; measurement of price elasticity of demand – percentage-change method and total expenditure method.

**Statistics**

 **Unit:1 Introduction**

* Concept of Economics and Significance of Statistics .What is Economics? Meaning, scope, functions and importance of statistics in Economics
* **Unit:2 Collection of data**
* Sources of data - primary and secondary; how basic data is collected with concepts of Sampling; methods of collecting data; some important sources of secondary data: Census of India and National Sample Survey Organization

**August & September**

**Micro Economics**

###  Unit:5 Consumer Equilibrium

* Meaning of utility, marginal utility, law of diminishing marginal utility, conditions of consumer's equilibrium using marginal utility analysis. Indifference curve analysis of consumer's equilibrium-the consumer's budget (budget set and budget line), preferences of the consumer (indifference curve, indifference map) and conditions of consumer's equilibrium.

**Statistics**

* **Unit: 4** Introduction
* Meaning of microeconomics and macroeconomics; positive and normative economics .What is an economy? Central problems of an economy: what, how and for whom to produce; concepts of production possibility frontier and opportunity cost.

###  Unit:2 Organization of Data

 Meaning and types of variables; Frequency Distribution. Presentation of Data ( Textual and Tabular Presentation)Tabular Presentation and Diagrammatic

Presentation of Data:(i) Geometric forms (bar diagrams and pie diagrams), (ii) Frequency diagrams(histogram, polygon and Ogive) and (iii) Arithmetic line graphs (time series graph).

 **Unit:3 Measures of Central Tendency - Arithmetic mean**

**# Project Work**

**October & November**

**Micro Economics**

###  Unit:6 Production function

 Meaning of Production Function – Short-Run and Long-Run. Total Product, Average Product and Marginal Product. Returns to a Factor

###  Unit:7 Cost

 Short run costs - total cost, total fixed cost, total variable cost; Average cost; Average fixed cost, average variable cost and marginal cost-meaning and their relationships.

 **Unit:7 Revenue**

 Short run costs - total cost, total fixed cost, total variable cost; Average cost; Average fixed cost, average variable cost and marginal cost-meaning and their relationships.

 **Unit:7 Producer Equilibrium**

 Meaning and its conditions in terms of marginal revenue marginal cost.

**Statistics**

###  Unit:3 Measures of Central tendency

 (Median and Mode)

**December**

### Micro Economics

 **Unit:6 Supply**

 Supply, market supply, determinants of supply, supply schedule, supply curve and its slope, movements along and shifts in supply curve, price elasticity of supply; measurement of price elasticity of supply - percentage-change method.

###  Unit:7 Main forms of market

 Perfect competition - Features; Determination of market equilibrium and effects of shifts in demand and supply.

**Statistics**

###  Unit:3 Measures of Correlation

 Meaning and properties, scatter diagram; Measures of correlation – Karl Pearson's method (two variables ungrouped data) Spearman's rank correlation.

**January &February**

**Micro Economics**

###  Unit:7 Price Determination and Simple Applications

* Simple Applications of Demand and Supply: Price ceiling, price floor.

**Statistics**

* **Unit:3 Index Numbers**
* Meaning, types - wholesale price index, consumer price index and index of industrial production, uses of index numbers; Inflation and index numbers  Revision

**Periodic test 1**

**Micro Economics**

Demand

**Statistics**

Concept of Economics and significance of Statistics in Economics

Collection of Data

### HALF YEARLY

**Micro Economics**

Introduction

Demand & Elasticity of Demand

Consumer Equilibrium

**Statistics**

Concept of Economics and significance of Statistics in Economics

Collection of Data

Census and sample method of collection of Data

Organization of Data

Presentation of Data : Textual and Tabular

Diagrammatic presentation of Data: Bar diagram and Pie Diagram

Frequency Diagrams: Histogram, Polygon and ogive

Arithmetic line – Graph or time series graph

Measures of Central Tendency – Arithmetic mean

**Periodic test 2**

**Micro Economics**

Production Function

Cost

Revenue

**Statistics**

Median and Mode

**FINAL EXAMINATION**

**Complete syllabus as per CBSE**

**PHYSICAL EDUCATION (048)**

### JULY

#### Unit I Changing Trends & Career in Physical Education

* Concept, Aims & Objectives of Physical Education
* Changing Trends in Sports- playing surface, wearable gears and sports equipment, technological advancements
* Career Options in Physical Education

Khelo-India and Fit-India Program

#### Unit II Olympism

* Ancient and Modern Olympics
* Olympism – Concept and Olympics Values (Excellence, Friendship & Respect)
* Olympics - Symbols, Motto, Flag, Oath, and Anthem
* Olympic Movement Structure - IOC, NOC, IFS, Other members

AUGUST - SEPTEMBER

#### Unit III Yoga

* Meaning & Importance of Yoga
* Introduction to Ashtanga Yoga
* Introduction to Yogic Kriyas (Shat Karma)

#### Unit IV Physical Education & Sports for CWSN (Children with Special Needs - Divyang)

* Concept of Disability and Disorder
* Types of Disability, its causes & nature (Intellectual disability, Physical disability)
* Aim & Objective of Adaptive Physical Education
* Role of various professionals for children with special needs (Counsellor,

Occupational Therapist, Physiotherapist, Physical Education Teacher, Speech Therapist & Special Educator)

#### Unit V Physical Fitness, Health and Wellness

* Meaning and Importance of Wellness, Health and Physical Fitness
* Components/Dimensions of Wellness, Health and Physical Fitness
* Traditional Sports & Regional Games for promoting wellness

### OCTOBER - NOVEMBER

#### Unit VI Test, Measurement & Evaluation

* Concept of Test, Measurement & Evaluation in Physical Education & sports.
* Classification of Test in Physical Education and Sports.
* Test administration guidelines in physical education and sports

#### Unit VII Fundamentals of Anatomy, Physiology in Sports

* Definition and Importance of Anatomy and Physiology in exercise and sports · Functions of Skeletal system, classification of bone and types of joints.
* Function and Structure of Circulatory system and heart.
* Function and Structure of Respiratory system.

DECEMBER

#### Unit VIII Fundamentals of Kinesiology and Biomechanics in Sports

* Definition and Importance of Kinesiology and Biomechanics in sports
* Principles of Biomechanics
* Types of Body Movements - Flexion, Extension, Abduction, Adduction, Rotation,

Circumduction, Supination & Pronation

* Axis and Planes – Concept and its application in body movements

### JANUARY - FEBRUARY

#### Unit IX Psychology & Sports

* Definition & Importance of Psychology in Physical Education & Sports
* Adolescent Problems & Their Management
* Team Cohesion and Sports

#### Unit X Training and Doping in Sports

* Concept and Principles of Sports Training
* Training Load: Over Load, Adaptation, and Recovery
* Concept of Doping and its disadvantages

#### Practical Max. Marks 30

* Physical Fitness Test : SAI Khelo India test, Brockport Physical Fitness Test

(BPFT)\* 6 Marks

* Proficiency in games and sports (skill of any IOA recognised Sports/Game of choice) 7 Marks \*\*Basketball, Football, Kabaddi, Kho-Kho, Volleyball, Handball, Hockey, Cricket.
* Yogic Practices\*\* 7 Marks
* Record File \*\*\* 5 Marks
* Viva Voce (Health/ Games & Sports/ Yoga) 5 Marks \*\*\*Record File shall include:

Practical-1: Labelled diagram of 400 M Track & Field with computations.

Practical-2: Describe Changing Trends in Sports in terms of change in playing surface,

wearable gears and sports equipment, technological advancements.

Practical-3: Labelled diagram of field & equipment of any one game of your choice out of the above list.

**Assessments**

### PERIODIC TEST -1 (AUGUST)

Unit I Changing Trends & Career in Physical Education

Unit II Olympism

Unit III Yoga

### MID TERM EXAMINATION (SEPTEMBER)

Unit I Changing Trends & Career in Physical Education

Unit II Olympism

Unit III Yoga

Unit IV Physical Education & Sports for CWSN (Children with Special Needs - Divyang)

Unit V Physical Fitness, Health and Wellness

### PERIODIC TEST -II (DECEMBER)

Unit VI Test, Measurement & Evaluation

Unit VII Fundamentals of Anatomy, Physiology in Sports

**ANNUAL EXAMINATION (MARCH)**

COMPLETE SYLLABUS

### BIOLOGY (044)

|  |  |  |
| --- | --- | --- |
| Unit | Title | Marks |
| I | Diversity of Living Organisms | 15 |
| II | Structural Organization in Plants and Animal | 10 |
| III | Cell: Structure and Function | 15 |
| IV | Plant Physiology | 12 |
| V | Human Physiology | 18 |
|  | Total | 70 |

#### JULY

##### Chapter-8: Cell-The Unit of Life

Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.

**Chapter-10: Cell Cycle and Cell Division**

Cell cycle, mitosis, meiosis and their significance

#### August-September

##### Chapter-9: Biomolecules

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzyme - types, properties, enzyme action. (Topics excluded: Nature of Bond Linking Monomers in a Polymer, Dynamic State of Body Constituents – Concept of Metabolism, Metabolic Basis of Living, The Living State)

##### Chapter-1: The Living World

Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature

##### Chapter-2: Biological Classification

Five kingdom classification; Salient feature and classification of Monera Protista and Fungi into

major groups Lichens, Viruses and Viroids.

##### Chapter-3: Plant Kingdom

Classification of plants into major groups; Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae (Topics excluded

– Angiosperms, Plant Life Cycle and Alternation of Generations)

##### Chapter-4: Animal Kingdom

Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and at a few examples of each category).

#### October-November

##### Chapter-5: Morphology of Flowering Plants

Morphology of different parts of flowering plants: root, stem, leaf, inflorescence,

flower, fruit and seed. Description of family Solanaceae **Chapter-6: Anatomy of Flowering Plants**

Anatomy and functions of tissue systems in dicots and monocots. **Chapter-7: Structural Organisation in Animals**

Morphology, Anatomy and functions of different systems (digestive, circulatory,respiratory, nervous and reproductive) of frog. **Chapter-13: Photosynthesis in Higher Plants**

Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis. **December**

##### Chapter-14: Respiration in Plants

Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient. **Chapter-15: Plant - Growth and Development**

Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA

##### Chapter-17: Breathing and Exchange of Gases

Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.

#### January-February

##### Chapter-18: Body Fluids and Circulation

Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.

##### Chapter-19: Excretory Products and their Elimination

Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.

##### Chapter-20: Locomotion and Movement

Types of movement - ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

##### Chapter-21: Neural Control and Coordination

Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse.

##### Chapter-22: Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease.

**REVISION & COMPLETION OF PRACTICAL & PROJECT WORK**

Assessments

#### Periodic Test-I (August)

Chapter-8 Cell:The Unit of Life

Chapter-10 Cell Cycle and Cell Division

Chapter-1 Living World

#### Mid Term Examination (September) Chapter-1 Living World

Chapter-2 Biological Classification

Chapter-3 Plant Kingdom

Chapter-4 Animal Kingdom

Chapter-8 Cell:The Unit Of Life

Chapter-9 Biomolecules

Chapter-10 Cell Cycle and Cell Division

#### Periodic Test-II (December)

Chapter-5 Morphology of Flowering Plants

Chapter-6 Anatomy of Flowering Plants

Chapter-7 Structural Organisation in Animals

**Annual Examination (March)**

Complete Syllabus as per CBSE guidelines

#### LIST OF PRACTICALS

|  |  |
| --- | --- |
| **Evaluation Scheme** | **Marks** |
| One Major Experiment Part A (Experiment No- 1,3,7,8) | 5 |
| One Minor Experiment Part A (Experiment No- 6,9,10,11,12,13) | 4 |
| Slide Preparation Part A (Experiment No- 2,4,5) | 5 |
| Spotting Part B | 7 |
| Practical Record + Viva Voce | 4 |
| Project Record + Viva Voce | 5 |
| **TOTAL** | **30** |

#### A. List of Experiments

1. Study and describe locally available common flowering plants, from family Solanaceae (Poaceae, Asteraceae or Brassicaceae can besubstituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams), type of root (tap and adventitious); type of stem (herbaceous and woody); leaf (arrangement, shape, venation, simple and compound). 2. Preparation and study of T.S. of dicot and monocot roots and stems (primary).

1. Study of osmosis by potato osmometer.
2. Study of plasmolysis in epidermal peels (e.g. Rhoeo/lily leaves or flashy scale leaves of onion bulb).
3. Study of distribution of stomata on the upper and lower surfaces of leaves. 6. Comparative study of the rates of transpiration in the upper and lower surfaces of leaves.
4. Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials.
5. Separation of plant pigments through paper chromatography.
6. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.
7. Test for presence of urea in urine.
8. Test for presence of sugar in urine.
9. Test for presence of albumin in urine. 13. Test for presence of bile salts in urine.

**B. Study and observe the following (Spotting):**

1. Parts of a compound microscope.
2. Specimens/slides/models and identification with reasons - Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.
3. Virtual specimens/slides/models and identifying features of - Amoeba, Hydra,liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honey bee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.
4. Mitosis in onion root tip cells and animals cells (grasshopper) from permanent slides.
5. Different types of inflorescence (cymose and racemose).
6. Human skeleton and different types of joints with the help of virtual images/models only.

##### Physics (042)

|  |  |  |
| --- | --- | --- |
|  |  | Marks |
| Unit–I | PhysicalWorldandMeasurement | 23 |
|  | Chapter–1:PhysicalWorld |  |
|  | Chapter–2:Units andMeasurements |  |
| Unit-II | Kinematics |  |
|  | Chapter–3:Motionin aStraightLine |  |
|  | Chapter–4:Motionin aPlane |  |
| Unit-III | LawsofMotion |  |
|  | Chapter–5:LawsofMotion |  |
| Unit-IV | Work,Energy andPower | 17 |
|  | Chapter–6:Work, EnergyandPower |  |
| Unit–V | Motionof SystemofParticlesandRigidBody |  |
|  | Chapter–  7:SystemofParticlesandRotationalMotion |  |
| Unit–VI | Gravitation |  |
|  | Chapter–8:Gravitation |  |
| Unit–VII | PropertiesofBulkMatte | 20 |
|  | Chapter–9:MechanicalPropertiesofSolids |  |
|  | Chapter–10:MechanicalPropertiesofFluids |  |
|  | Chapter–11:ThermalPropertiesofMatter |  |
| Unit–VIII | Thermodynamics |  |
|  | Chapter–12:Thermodynamics |  |
| Unit–IX | Behaviour ofPerfect  GasesandKineticTheoryofGases |  |
|  | Chapter–13:KineticTheory |  |
| Unit–X | OscillationsandWaves | 10 |
|  | Chapter–14:Oscillations |  |
|  | Chapter–15:Waves |  |
|  | Total | 70 |

##### July

UNITI.Physicalworldandmeasurement

Unit II. Kinematics (motion in straight line)

##### August & September

UnitII.Kinematics (motioninplane) UnitIII.Lawsof motion

UnitIV.Work,Energyandpower

**RevisionforMid Term Examination**

##### October & November

UnitV.Motionof system ofparticlesandrigid body

UnitVI.Gravitation

UnitVII.Propertiesofbulkmatter

##### December

UnitVIII.Thermodynamics

UnitIX.Behaviourofperfectgasandkinetictheoryofgases **January- February**

UnitX.OscillationsandWaves

Revision ofcompletesyllabus

##### ASSESSMENT PeriodicTest-1 (August)

Physical World and Measurement Motioninastraightline

Motionina plane(selected terms)

##### PeriodicTest-2 (December- 22)

Lawsofmotion

Work,Energyandpower

##### MidTermExamination

UNIT.IPhysicalworldandmeasurement

Unit.IIKinematics(motioninstraightline)

Unit.IIKinematics(motioninplane)

Unit.IIILawsofmotion

Unit.IVWork,Energyandpower

##### AnnualExamination– March-2023CompleteSyllabus

**PRACTICAL–(2022-23)** GeneralInstructions:

Everyone has to perform 12 practical during the academic session.

6practicalfromsectionAand4 fromsectionB.

SECTIONS-A&B

ExpNo 1(a). Tomeasurediameterofasmallsphericalbody usingVernierCallipers.

ExpNo 1(b).

TomeasurediameterofasmallcylindricalbodyusingVerni erCallipers.

Exp No 2. To measure internal diameter and depth of a givenbeaker/calorimeterusingVernierCallipersandhen cefinditsvolume.

ExpNo3. Tomeasurediameterofagivenwireandthicknessofagivensheet usingscrewgauge.

ExpNo4.Todeterminevolumeofanirregularlaminausingscrewgauge.

ExpNo5.Todetermineradiusofcurvatureofagivensphericalsurfacebyaspherom eter.

|  |  |
| --- | --- |
|  |  |
| ExpNo6. | Todeterminethemassoftwodifferentobjectsusingabeambalance. |
| Exp No7. | To find the weight of a given body using parallelogram law ofvectors. |
| Exp No8.    ExpNo9. | Using a simple pendulum, plots its L-T2 graph and use it to findthelengthof second’spendulum. |

Tostudyvariationoftimeperiodofasimplependulumofagiv enlength by taking bobs of same size but different masses andinterpret theresult.

ExpNo10.To determinethecoefficientofviscosityofagivenviscousliqui dbymeasuringterminalvelocityofagivensphericalbody.

ExpNo11. Tofindthespeedofsoundinairattheroomtemperature usinga resonance tube bytworesonancepositions.

ExpNo12. To study the rate of loss of heat for a colling body and plot temperature -time graph and hence interpret the result.

Note :Total 12practicalonthechoiceofstudents

### MATHEMATICS (041)

|  |  |  |
| --- | --- | --- |
| **S.NO.** | **UNITS** | **MARKS** |
| **1** | **Sets and Functions** | **23** |
| **2** | **Algebra** | **25** |
| **3** | **Coordinate Geometry** | **12** |
| **4** | **Calculus** | **08** |
| **5** | **Statistics and Probability** | **12** |
|  | **TOTAL** | **80** |
|  | **INTERNAL ASSESSMENT** | **20** |
|  | **GRAND TOTAL** | **100** |

**Theory: 80 marks**

**Practical: 20 marks Time: 3 hours**

**EVALUATION SCHEME**

**JULY**

### Unit-I: Sets and Functions

1. **Sets**

Sets and their representations, Empty set, Finite and Infinite sets, Equal sets, Subsets, Subsets of a set of real numbers especially intervals (with notations). Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. Properties of Complement.

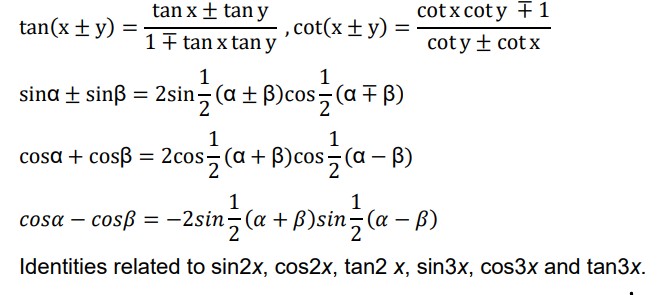
1. **Relations & Functions**

Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself (up to R x R x R). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs. Sum, difference, product and quotients of functions.

#### AUGUST-SEPTEMBER

**3. Trigonometric Functions**

Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity sin2x + cos2x = 1, for all x. Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing sin (x±y) and cos (x±y) in terms of sinx, siny, cosx& cosy and their simple applications. Deducing identities like the following:



### Unit-II: Algebra

**1. Complex Numbers and Quadratic Equations**

Need for complex numbers, especially √−1, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. Argand plane

#### 2. Linear Inequalities

Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line.

### Unit-V Statistics and Probability

#### 1. Statistics

Measures of Dispersion: Range, mean deviation, variance and standard deviation of ungrouped/grouped data.

**OCTOBER-NOVEMBER**

### Unit-II: Algebra

#### 3. Permutations and Combinations

Fundamental principle of counting. Factorial n. (n!) Permutations and combinations, derivation of Formulae for nPr and nCr and their connections, simple applications.

#### 4. Binomial Theorem

Historical perspective, statement and proof of the binomial theorem for positive integral indices. Pascal’s triangle, simple applications

#### 5. Sequence and Series

Sequence and Series. Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M.

### DECEMBER Unit-III: Coordinate Geometry

#### 1. Straight Lines

recall of two-dimensional geometry from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis, point -slope form, slope-intercept form, two-point form, intercept form, Distance of a point from a line.

#### 2. Conic Sections

Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and a pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

#### 3. Introduction to Three-dimensional Geometry

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points.

### JANUARY-FEBRUARY Unit-IV: Calculus

#### 1. Limits and Derivatives

Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions. Definition of derivative relate it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

### Unit-V Statistics and Probability

#### 2. Probability

Events; occurrence of events, ‘not’, ‘and’ and ‘or’ events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with other theories of earlier classes. Probability of an event, probability of ‘not’, ‘and’ and ‘or’ events.

REVISION OF COMPLETE SYLLABUS

**PRACTICAL:**

**ACTIVITY1:** To find the number of subsets of given set and verify that ifa set has n number of elements, then the total number of subsets is 2n.

**ACTIVITY2:**To represent set theoretic operations using Venn diagrams.

**ACTIVITY3:**To identify a relation and a function.

**ACTIVITY4:**To find analytically limx→c= x2-c2/x-c

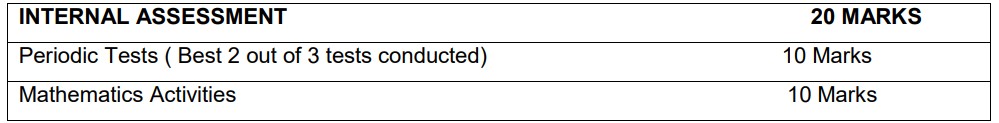
**ACTIVITY 5:**To demonstrate that the Arithmetic mean of two different positive numbers is always greater than the Geometric mean. **ACTIVITY 6:**To plot the graphs of sin x, sin 2x, 2sinx and sin 2 x, using same coordinate axes.

**ACTIVITY7:**To find the values of sine and cosine functions in second, third and fourth quadrants using their given values in first quadrant.

**ACTIVITY8:**To construct a parabola.

**ACTIVITY 9:**To write the sample space, when a coin is tossed once, two times, three times, four times.

**ACTIVITY10:** To verify the relation between the degree measure and the radian the measure of an angle.



**ASSESSMENT:**

#### PERIODIC TEST-I(AUGUST)

CHAPTER-:SETS

CHAPTER-:RELATION AND FUNCTION CHAPTER-: TRIGNOMETRIC FUNCTION

#### MID TERM EXAMINATION(SEPTEMBER)

CHAPTER-:SETS

CHAPTER-:RELATION AND FUNCTION

CHAPTER-: TRIGNOMETRIC FUNCTION

CHAPTER -: COMPLEX NUMBER AND QUADRATIC EQUATIONS

CHAPTER -: LINEAR INEQUALITIES

CHAPTER -: STATISTICS

#### PERIODIC TEST-II(DECEMBER)

CHAPTER -: PERMUTATION AND COMBINATION

CHAPTER -: BINOMIAL THEOREM

CHAPTER -: SEQUENCE AND SERIES

#### ANNUAL EXAMINATION

FULL SYLLABUS